

AMENDMENTS TO THE DRAWINGS:

A replacement drawing is submitted for Figure 4.

REMARKS

The application has been amended to place it in condition for allowance at the time of the next Official Action.

A replacement drawing is submitted for Figure 4 adding a second set of bearings so that each planet gear 47, 48 is mounted on a pair of bearings. The above change is the only change and is believed not to introduce new matter, while addressing the drawing objection noted on page 3 of the Official Action.

Claims 1-13, 15 and 16 are pending in the application.

Claims 1-5, 7-12, 15 and 16 were rejected under 35 USC 103(a) as being unpatentable over WO 02/079644 in view of WO 03/002891. That rejection is respectfully traversed.

Claim 1 recites that at least some bearings of a planetary gear transmission unit are taper roller bearings.

The Official Action recognizes that WO '644 does not disclose taper roller bearing. WO '891 is offered for this feature.

However, the proposed combination of references is improper because the references teach away from their combination.

Page 2, lines 14-21 of WO '644 discloses: "According to the invention, each planetary wheel of each set of planetary twin wheels may be mounted on the bogie shaft by means of a double spherical roller bearing, preferably a radial-axial-roller

bearing, the rollers of which can run in a common spherical track in an outer race of the bearing. As a result, particularly good possibilities are obtained of both planetary wheels of each set of planetary wheels being able to carry out very weak lateral inclinations ensured that the stresses transferred through the teeth of the planetary wheels are always uniformly distributed across the entire tooth width." Emphasis added.

Clearly WO'644 teaches away from the use of taper roller bearings for supporting the planet gears in favor of uniformly distributed stress.

In contrast, page 6, lines 17-26 of WO '891 discloses that by the use of taper roller bearings no such freedom is introduced, but on the contrary completely eliminated. "The rollers 70 together with the inner race 46 and the raceways 24 on the planet gear 6 form a double row tapered roller bearing 72 that couples the planet gear 6 to the carrier pin 34 about which the gear 6 rotates. Indeed, the bearing 72 has the capacity to facilitate rotation of the planet gear 6 about the axis Y with minimal friction, while confining the gear 6 radially and axially on the carrier pin 34. In other words, the bearing 72 takes thrust loading in both axial directions. Moreover, the bearing 72 is set to a condition of light preload, and as a consequence no axial or radial clearances exist within it. This enables the gear 6 to rotate on the carrier pin 34 without axial or radial free motion and without wobbling." Emphasis added.

In view of the above, a person skilled in the art, upon reading both WO '644 and WO '891, would not be incited to use taper roller bearings for supporting the planet gears, since

problems with the stress distribution are expected to occur. Accordingly, the proposed combination of references does not meet the present claims.

The dependent claims are believed patentable at least for depending from an allowable independent claim.

In addition, at least claim 5 is believed to further define over WO '644 in that WO '644 fails to disclose that each gear of a pair is mounted on a pair of taper roller bearings.

First of all, as set forth above, the bearings of WO '644 are not taper roller bearings and rather are double spherical bearings. In any event, each planet gear 17a and 17b of WO '644 is each supported by a single double spherical bearing. The proposed combination of references does not meet the recited each planet gear is mounted on a pair of taper roller bearings. Accordingly, claim 5 is believed to be patentable regardless of the patentability of the claims on which it depends.

Claims 1-13, 15 and 16 were rejected under 35 USC 103(a) as being unpatentable over WO 02/14690 in view of WO 03/002891. That rejection is respectfully traversed.

The Official Action recognizes that WO '690 does not disclose taper roller bearings and rather, offers WO '891 for this feature.

However, the proposed combination of references is insufficient to render obvious the present claims.

MPEP 2143.01 provides that "Obviousness can * be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (discussing rationale underlying the motivation-suggestion-teaching *>test< as a guard against using hindsight in an obviousness analysis)."

For a person skilled in the art it is clear that the selection of a bearing depends very much on the situation, in particular, the load and stresses that are applied to the bearing.

The primary reference (WO '690) is premised on the use of a bogie plate. The Official Action overlooks the fact that from a mechanical point of view a planetary gear system wherein planet gears are mounted on planet shafts which are supported by a bogie plate is very different from the planetary system of WO '891 wherein the planet gears are mounted at one side of a planet carrier.

Firstly, the loads are completely different. According to the state of the art at the time of filing it was always believed that in planetary gear systems with a bogie plate the bearings needed to be able to accommodate certain amounts of misalignment in order to avoid problems with the gear intermeshing.

This is certainly true in planetary gear systems of wind turbines in which very high loads are very common,

especially in wind turbines of the integrated type wherein considerable misalignments can occur.

Therefore, WO '690 implicitly avoids the use of taper roller bearings, since, as was believed at the time of filing, such taper roller bearings do not provide the needed ability of misalignment accommodation.

Secondly, one of ordinary skill in the art would readily recognize that the purpose and requirements of bogie plate bearings are completely different from the purpose and requirements of planetary gear bearings. Therefore, it would not have been obvious to modify the planetary gear system of WO '690 to include taper bearings. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-13, 15 and 16 were rejected under 35 USC 103(a) as being unpatentable over WO 03/014566 in view of WO 03/002891. That rejection is respectfully traversed.

The Official recognizes that WO '566 does not use taper bearings in a planetary gear system. WO '891 is offered for this feature.

However, the proposed combination is improper, because the references teach away from their combination.

WO '566 discloses at least in claim 6 which types of bearings are proposed, i.e.: "A drive assembly according to any one of the preceding claims, wherein the bogie planets are supported by self aligning bearings comprising one or more of toroidal bearings or spherical bearings or cylindrical bearings."

It is clear that a taper roller type bearing is not contemplated, since such a type of bearing is not "self-aligning", which characteristic is considered to be required for the particular application of planetary gear systems with a bogie plate.

Accordingly, WO '566 teaches away from using bearings that are not self-aligning and thus, teaches away from using taper roller bearings for supporting the planet gears.

In view of the above, it is believed to be apparent that the proposed combinations of references fail to overcome the prejudice that the planet gears of a planetary gear system with a bogie plate necessarily need to be supported by a bearing of a self-aligning type or a bearing that allows the planet gears to carry out very weak lateral inclinations as was commonly accepted at the time the present application was filed.

Accordingly, it would not have been obvious to combine the references in the manner suggested in order to meet the present claims.

Claim 6 was rejected under 35 USC 103(a) as being unpatentable over WO 02/079644 in view of WO '891 and further in view of WO '690 and WO '566. That rejection is respectfully traversed.

Claim 6 depends from claim 1 and further defines the invention and is believed to define over the proposed combination of references at least for depending from an allowable independent claim.

In addition, as argued above, none of the references disclose taper roller bearings in a planetary gear system with a bogie plate. Thus, it would not have been obvious to use taper bearings in the recited planetary gear system based on the teachings of the references.

Moreover, it was commonly accepted in the prior art that planetary gear bearings should have a certain degree of freedom in order to compensate for certain misalignment of the gears so that damage to the gear toothing is avoided. Thus, as taught by the prior art, spherical roller bearings were used in the planetary gear system.

Nothing in the prior art references suggests the use of taper roller bearings in a planetary gear system using a bogie plate.

Claim 13 was rejected under 35 USC 103(a) as being unpatentable over WO '644 in view of WO '891 and further in view of WO '690 and WO '566. That rejection is respectfully traversed.

Claim 13 depends from claim 1 and is believed patentable over the proposed combination of references at least for depending from an allowable independent claim.

In view of the present amendment and the foregoing Remarks, the present application has been placed in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

- Replacement drawing for Figure 4